



U.S. Department of Energy
Energy Efficiency and Renewable Energy

federal energy management program

Renewable Power Purchase Basics

David McAndrew

FEMP

202-586-7722

david.mcandrew@ee.doe.gov



What is Renewable Power?

- Electricity generated from renewable energy sources
 - Also commonly referred to as “green power”
- “Renewable”/”Green” – many definitions
 - Federal definition: wind, solar, geothermal and biomass
 - Note: Texas & NJ “green” definition includes natural gas



Renewable Power Purchasing Options

- Deregulated Electricity Market
- Regulated Utility Green Pricing
- Renewable Energy Certificates (REC)



Competitive Electricity Market

In states with deregulated electricity markets, customers may purchase renewable power from a choice of suppliers

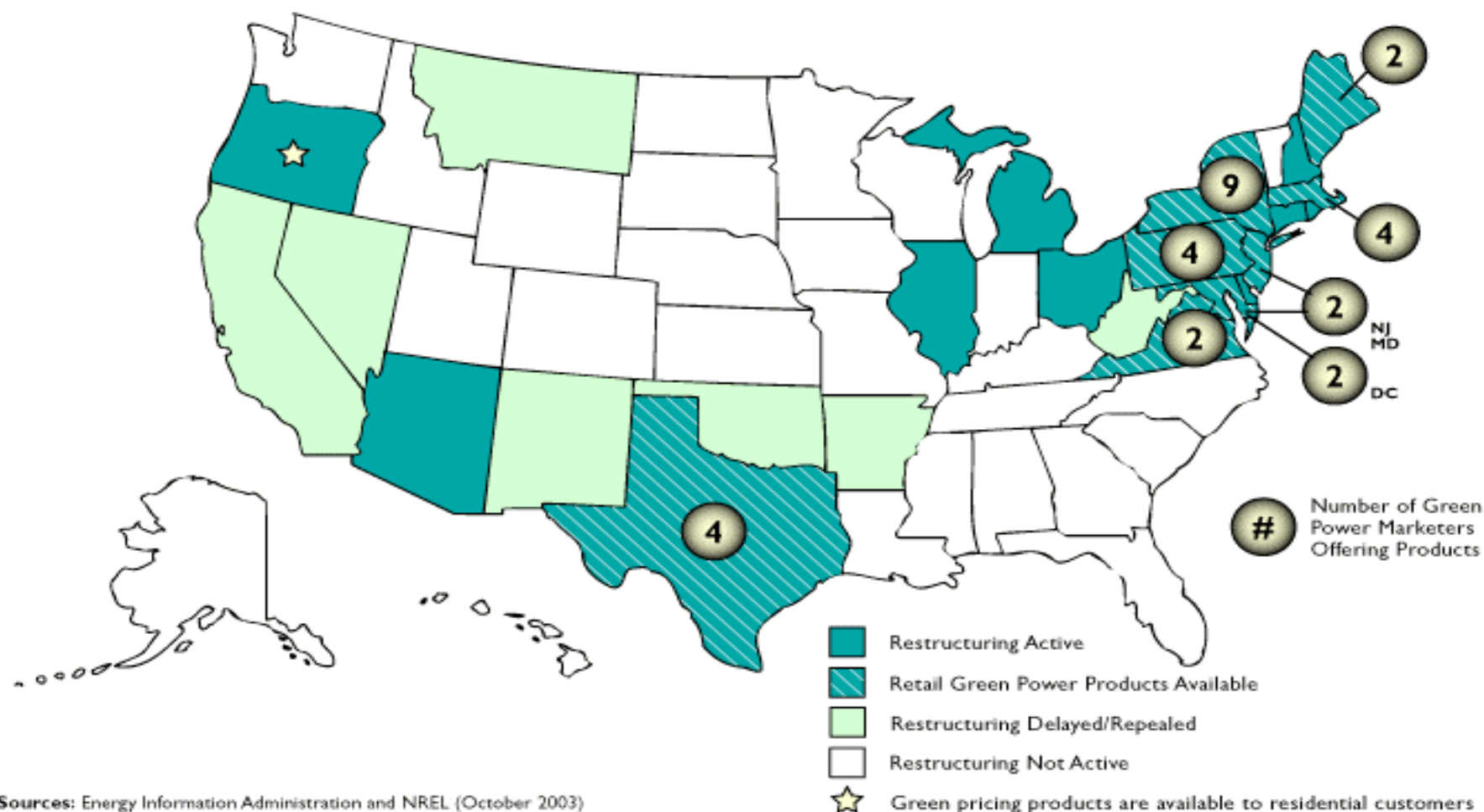
Pros

- Can use competitive procurement savings to buy a percentage of renewable power
- Reasonable renewable power product price
- GSA, DESC and Western Area Power Administration expertise
- GSA Supply Schedule options
- Ensures renewable energy premium comes from utility budget

Cons

- Combining renewable requirement with commodity may result in a total price higher than when buying separately
- Can be complicated

Green Power Marketing Activity in Competitive Electricity Markets



Sources: Energy Information Administration and NREL (October 2003)



Utility Green Pricing

Voluntary program that allows customers to purchase renewable power from their utility

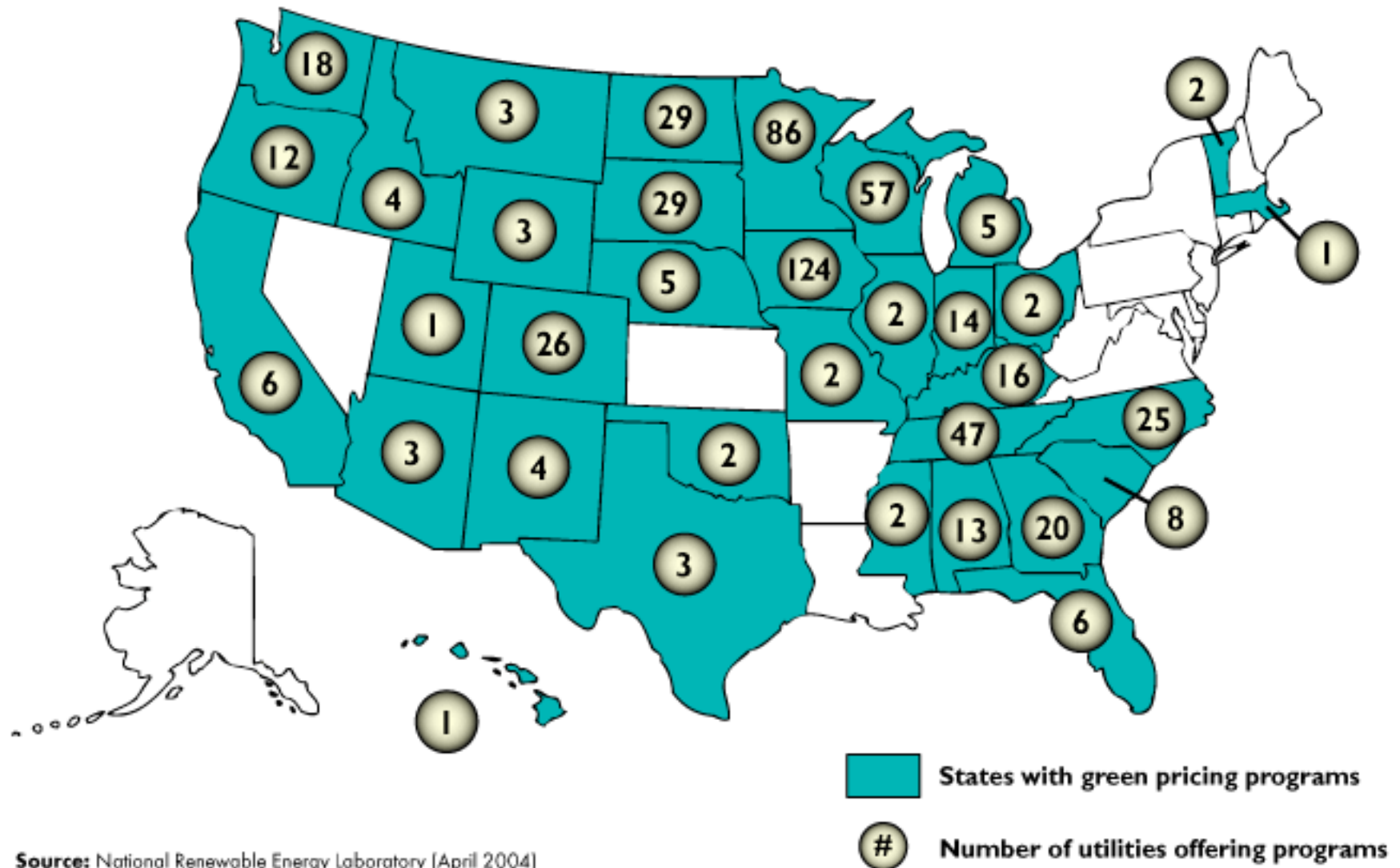
- **Pros**

- No competition required
- Existing relationship
- Supports local efforts
- Can be simple, with an existing Areawide Contract (AWC)

- **Cons**

- May be more expensive than competitive procurements

Utility Green Pricing Activities



Source: National Renewable Energy Laboratory (April 2004)



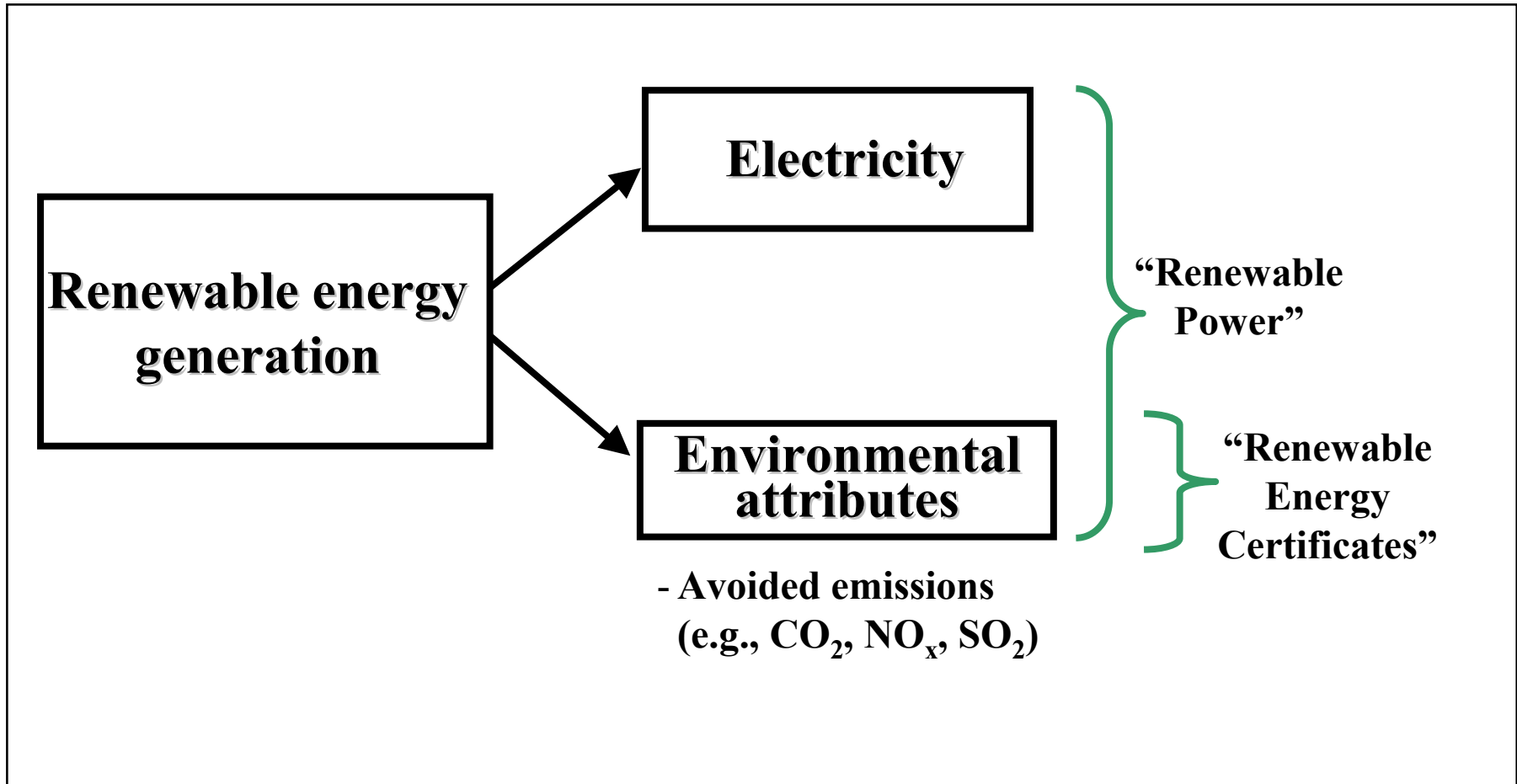
Renewable Energy Certificates (RECs)

A renewable energy facility produces two distinct products, that may be sold separately:

- Generic electricity (sold into the local grid)
 - RECs (the environmental and other attributes)
 - Competitive procurement
- Also referred to as Tradable Renewable Certificates, Green Tags, Green Energy Certificates/Credits, etc
 - Utility provider and bill does not change
 - Allows access to renewable resources nation wide
 - Recent procurements have resulted in very low prices



REC Diagram





RECs vs. Other Purchase Options

Other Purchase Options	RECs
Purchase from utility or competitive electric supplier	Purchase from REC supplier
Limited availability	Available anywhere
One bill in most cases	Separate bills
Grouping most follow energy contracts	Allows for greater aggregation across sites



- Available anywhere
- Often the lowest cost option, since scheduling costs and (most) transmission costs are eliminated
- Option for leased facilities that don't directly pay their utility bill
- Regional, even national purchases are possible - reduces administrative requirements
- Do not need to change electricity suppliers



- Difficult to explain, but product is gaining visibility and recognition
- Possible contractual and/or budget issues
 - Separate bill (not part of the utility bill)
 - “Color of money”
- Must request local renewable generation for local/regional air quality and/or local economic development benefits
- Constant price product – no protections from electricity price volatility
 - Preliminary discussions regarding variable priced product linked to some electricity/natural gas price index



REC Prices

Evolution Markets REC Monthly Updates

- <http://www.evomarkets.com/resources/index.php?xp1=1>
- Wholesale prices
- Different prices for voluntary and compliance markets
- Prices consistent with recent competitive procurements

- Green Power Network

- 1.5 – 4¢/kWh (“off-the-shelf” products)
- www.eere.energy.gov/greenpower/certificates.shtml?page=1
- Great for small purchases



Green Power Partnership

- Developed in response to a recommendation in the President's energy plan
- DOE and EPA are Founding Partners
- Mission
 - Standardize green power procurement as part of best practice environmental management
- Current Status
 - Over 300 Partners with a combined total commitment to over one billion kilowatt hours of green power annually
 - 21 Federal Partners



Partnership Requirements

Switch to a percentage of green power within one year

- using eligible renewable resources
 - solar, wind, geothermal, biogas, biomass, and small hydro
 - follow Green-e regional eligible resource standards
 - 50% must come from new resources

Annual Electricity Consumption	Commitment
> 100,000,000 kWh	2% of load
< 100,000,000 kWh	3% of load
< 10,000,000 kWh	6% of load
< 1,000,000 kWh	10% of load
< 100,000 kWh	15% of load

- in any combination of grid-based green power, renewable energy certificates, and on-site power generation
- for a facility, an operating unit, all facilities within a utility service territory, state, or entire organization



Federal Partners

- **Environmental Protection Agency**
- **Department of Energy**
 - **Forrestal Headquarters Building, Washington, DC**
 - **Golden Field Office, Golden, CO**
 - **Denver Regional Office, Denver, CO**
 - **NREL, Golden, CO**
 - **Facilities in Germantown, MD**
 - **Pacific Northwest National Laboratory**
- **Department of Interior, Independence National Park, Philadelphia, PA**
- **Department of Agriculture, Headquarters Building, Washington, DC**
- **Army, Walter Reed Medical Center, Washington, DC**
- **GSA, Binghamton Federal Building, Utica, NY**
- **GSA, Pirnie Federal Building, Utica, NY**
- **Navy Region South**
- **U.S. Air Force Dyess Air Force Base**
 - **Cannon Air Force Base**
 - **Ellsworth Air Force Base**
 - **Fairchild Air Force Base**
 - **Goodfellow Air Force Base**
 - **Laughlin Air Force Base**
 - **Minot Air Force Base**
 - **Shepherd Air Force Base**

**EPA Administrator
Whitman Honors
Independence
National Park,
Philadelphia, PA**





Joining the Partnership

- Partnership website at www.epa.gov/greenpower
- Contact Kurt Johnson: johnson.kurt@epa.gov,
202-343-9231
- Submit Partnership Letter of Intent
- Receive recognition
 - Partnership website
 - Press releases
 - Press events
 - Logo usage
 - Awards



**Green Power Leadership Awards
Presented Annually by DOE and EPA**